Exhibit A

Information Sheets Identifying Cell Lines

Please see attached 23 pages

SNB-19

DSMZ

Cell line	SNB-19
Cell type	human glioblastoma
DSMZ No	ACC 325
Origin	established from the surgical resection of a left parieto-occipital gl from a 47-year-old man in 1980; cells were described to secrete plasmi activator, to be clonogenic in soft agar and to be tumorigenic in nude
References	Gross et al., Cancer Res. 48: 291-296 (1985)
Depositor	Dr. H. Weich, GBF, Braunschweig, Germany

DSMZ Cell Culture Data

Morphology	adherent fibroblastic cells growing as monolayer with contact inhibiti occasional giant cells
Medium	90% Dulbecco's MEM + 10% FBS
Subculture	split confluent culture 1:10 every 3-5 days using trypsin/EDTA; seed o 10^6 cells/80 cm^2 in 8-10 ml medium
Incubation	at 37 °C with 5-10% CO_2
Doubling time	doubling time of ca. 24 hours
Harvest	cell harvest of ca. 15 x 10^6 cells/175 cm^2
Storage	frozen with 70% medium, 20% FBS, 10% DMSO at about 2-4 x 10^6 cells/amp

DSMZ Scientific Data

Mycoplasma	negative in DAPI, microbiological culture, RNA hybridization, PCR assa
Immunology	cytokeratin-, desmin-, endothel-, GFAP+, neurofilament-, vimentin+
Fingerprint	multiplex PCR of minisatellite markers revealed a unique DNA profile
Species	confirmed as human with IEF of AST, MDH, NP
Cytogenetics	human hypotriploid karyotype with 15% polyploidy; 63(58-63)<3n>XXY, +1 -10, -12, -13, -14, -15, -16, -18, -21, -22, +2mar; der(1)del(1)(q23)ins(1;4)(p32;q?23q27), del(1)(q13), del(4)(q23q27), del(4)(q28q35), add(8)(q24), add(11)(p15), der(19)add(19)(p13)add(19)(submetacentric, der(19) and der(1) markers; matches published karyotyp
Viruses	ELISA: reverse transcriptase negative; PCR: EBV-, HBV-, HCV-, HHV-8-, HTLV-I/II-

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Cell Lines

ATCC Number:	**CRL-1620** Order this item	**Price:**	**$175.00**
Designation:	**A172**	**Depositors:**	DJ Giard
Biosafety Level:	1	**Shipped:**	frozen
Medium & Serum:	See Propagation	**Growth Properties:**	adherent
Organism:	*Homo sapiens* (human)		
Tissue:	brain; glioblastoma		

Permits/Forms: In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.

Related Cell Culture Products

Tumorigenic:	no; The cells were not tumorigenic in immunosuppressed mice, but did form colonies in semisolid medium.
Age Stage:	53 years
Gender:	from male organism(s)
Propagation:	ATCC medium: Dulbecco's modified Eagle's medium with 4 mM L-glutamine adjusted to contain 1.5 g/L sodium bicarbonate and 4.5 g/L glucose, 90%; fetal bovine serum, 10% Temperature: 37.0 C
Subculturing:	Remove medium, and rinse with 0.25% trypsin, 0.03% EDTA solution. Remove the solution and add an additional 1 to 2 ml of trypsin-EDTA solution. Allow the flask to sit at room temperature (or at 37C) until the cells detach Add fresh culture medium, aspirate and dispense into new culture flasks.
Split Ratio:	A subcultivation ratio of 1:3 to 1:8 is recommended
Fluid Renewal:	Every 2 to 3 days
Freeze Medium:	culture medium 95%; DMSO, 5%
Related Products:	Recommended medium (without the additional supplements or serum described under ATCC Medium) - ATCC No: 30-2002 recommended serum - ATCC No 30-2020

References:	23094: Olopade OI , et al. Molecular analysis of deletions of the short arm of chromosome 9 in human gliomas. Cancer Res. 52: 2523-2529, 1992. PubMed: 1568221 23218: Giard DJ , et al. In vitro cultivation of human tumors: establishment of cell lines derived from a series of solid tumors. J. Natl. Cancer Inst. 51: 1417-1423, 1973. PubMed: 4357758 32550: Debinski W , et al. Receptor for interleukin (IL) 13 does not interact with IL4 but receptor for IL4 interacts with IL13 on human glioma cells. J. Biol. Chem. 271: 22428-22433, 1996. PubMed: 8798406

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A172 Word Search Clear Search

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Cell Lines

ATCC Number:	HTB-14 Order this item	**Price:**	**$175.00**
Designation:	U-87 MG	**Depositors:**	J Ponten
Biosafety Level:	1	**Shipped:**	frozen
Medium & Serum:	See Propagation	**Growth Properties:**	adherent
Organism:	*Homo sapiens* (human)	**Morphology:**	epithelial PHOTO
Tissue:	brain; glioblastoma; astrocytoma		

Permits/Forms: In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.

Related Cell Culture Products

Comments:	This is one of a number of cell lines derived from malignant gliomas (see also ATCC HTB-15, ATCC HTB-16 and ATCC HTB-17) by J. Ponten and associates from 1966 to 1969. Mycoplasma contamination was eliminated in September 1975.
Tumorigenic:	Yes, in nude mice inoculated subcutaneously with 10(7) cells
Antigen Expression:	Blood Type A, Rh+
Karyotype:	This is a hypodiploid human cell line with the modal chromosome number of 44 occurring in 48% of cells. The rate of higher ploidy was 5.9%. Twelve markers were common to all cells, including der(1)t(1;3) (p22;q21), der(16)t(1;16) (p22;p12), del(9) (p13) and nine others. The marker der(1) had two copies in most cells. There was only one copy of normal X. N1, N6 and N9 were not found.
Isoenzymes:	AK-1, 1; ES-D, 1; G6PD, B; GLO-I, 1; Me-2, 1; PGM1, 2; PGM3, 1
Age Stage:	44 years
Gender:	from female organisms(s)
Ethnicity:	Caucasian

Propagation:	ATCC medium: Minimum essential medium (Eagle) with 2 mM L-glutamine and Earle's BSS adjusted to contain 1.5 g/L sodium bicarbonate, 0.1 mM non-essential amino acids, and 1.0 mM sodium pyruvate, 90%; fetal bovine serum, 10% Temperature: 37.0 C
Subculturing:	Remove medium, and rinse with 0.25% trypsin, 0.03% EDTA solution. Remove the solution and add an additional 1 to 2 ml of trypsin-EDTA solution. Allow the flask to sit at room temperature (or at 37C) until the cells detach. Add fresh culture medium, aspirate and dispense into new culture flasks.
Split Ratio:	A subcultivation ratio of 1:2 to 1:5 is recommended
Fluid Renewal:	2 to 3 times per week
Freeze Medium:	Culture medium, 95%; DMSO, 5%
Related Products:	Recommended medium (without the additional supplements or serum described under ATCC Medium) - ATCC No: 30-2003 recommended serum - ATCC No: 30-2020
References:	22159: Beckman G , et al. G-6-PD and PGM phenotypes of 16 continuous human tumor cell lines. Evidence against cross-contamination and contamination by HeLa cells. Hum. Hered. 21: 238-241, 1971. PubMed: 4332744 22536: Fogh J , et al. Absence of HeLa cell contamination in 169 cell lines derived from human tumors. J. Natl. Cancer Inst. 58: 209-214, 1977. PubMed: 833871 22539: Fogh J , et al. One hundred and twenty-seven cultured human tumor cell lines producing tumors in nude mice. J. Natl. Cancer Inst. 59: 221-226, 1977. PubMed: 327080 23094: Olopade OI , et al. Molecular analysis of deletions of the short arm of chromosome 9 in human gliomas. Cancer Res. 52: 2523-2529, 1992. PubMed: 1568221 23128: Ponten J , Macintyre EH . Long term culture of normal and neoplastic human glia. Acta Pathol. Microbiol. Scand. 74: 465-486, 1968. PubMed: 4313504 32901: Li YM , et al. Molecular identity and cellular distribution of advanced glycation endproduct receptors: relationship of p60 to OST-48 and p90 to 80K-H membrane proteins. Proc. Natl. Acad. Sci. USA 93: 11047-11052, 1996. PubMed: 8855306

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Cell Lines

ATCC Number:	**HTB-16** Order this item	**Price:**	**$215.00**
Designation:	U-138 MG	**Depositors:**	J Ponten
Biosafety Level:	1	**Shipped:**	frozen
Medium & Serum:	See Propagation	**Growth Properties:**	adherent
Organism:	*Homo sapiens* (human)	**Morphology:**	polygonal
Tissue:	brain; glioblastoma		

Permits/Forms: In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.

Related Cell Culture Products

Comments:	NOTE: The two glioblastoma cell lines, U-118 MG (HTB-15) and U-138 MG (HTB-16), reportedly from different individuals have identical VNTR and similar STR patterns. U-118 MG and U-138 MG are very similar cytogenetically and share at least six derivative marker chromosomes. This is one of a number of cell lines derived from malignant gliomas (see also ATCC HTB-14, ATCC HTB-15 and ATCC HTB-17) by J. Ponten and associates from 1966 to 1969. It differs from ATCC HTB-14 in morphology and it has a slower proliferation rate. Mycoplasma contamination was observed and cured by March 1974.
Tumorigenic:	No, in immunosuppressed mice
Antigen Expression:	Blood Type A; Rh+
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 12 D13S317: 9,11 D16S539: 12,13 D5S818: 11 D7S820: 9 TH01: 6 TPOX: 8 vWA: 18

Karyotype:	Hyperdiploid to pentaploid with several markers; the stemline chromosome number is near triploid with the 2S component occurring at 9.8%. Five markers [t(11;5), t(8q;4), t(19;?18), M1 and M2] were common to most S metaphases. One chromosome 4 could be found in every S metaphase. Chromosome composition was very uniform among cells.
Isoenzymes:	AK-1, 1; ES-D, 1; G6PD, B; GLO-I, 1-2; Me-2, 1; PGM1, 1; PGM3, 1
Age Stage:	47 years
Gender:	from male organism(s)
Ethnicity:	Caucasian
Propagation:	ATCC medium: Minimum essential medium (Eagle) with 2 mM L-glutamine and Earle's BSS adjusted to contain 1.5 g/L sodium bicarbonate, 0.1 mM non-essential amino acids, and 1.0 mM sodium pyruvate, 90%; fetal bovine serum, 10% Temperature: 37.0 C
Subculturing:	Remove medium, and rinse with 0.25% trypsin, 0.03% EDTA solution. Remove the solution and add an additional 1 to 2 ml of trypsin-EDTA solution. Allow the flask to sit at room temperature (or at 37C) until the cells detach. Add fresh culture medium, aspirate and dispense into new culture flasks.
Split Ratio:	A subcultivation ratio of 1:4 to 1:8 is recommended
Fluid Renewal:	2 to 3 times per week
Freeze Medium:	Culture medium, 95%; DMSO, 5%
Related Products:	Recommended medium (without the additional supplements or serum described under ATCC Medium) - ATCC No: 30-2003 recommended serum - ATCC No: 30-2020
References:	22159: Beckman G , et al. G-6-PD and PGM phenotypes of 16 continuous human tumor cell lines. Evidence against cross-contamination and contamination by HeLa cells. Hum. Hered. 21: 238-241, 1971. PubMed: 4332744 22536: Fogh J , et al. Absence of HeLa cell contamination in 169 cell lines derived from human tumors. J. Natl. Cancer Inst. 58: 209-214, 1977. PubMed: 833871 23094: Olopade OI , et al. Molecular analysis of deletions of the short arm of chromosome 9 in human gliomas. Cancer Res. 52: 2523-2529, 1992. PubMed: 1568221 23128: Ponten J , Macintyre EH . Long term culture of normal and neoplastic human glia. Acta Pathol. Microbiol. Scand. 74: 465-486, 1968. PubMed: 4313504 32274: Koochekpour S , et al. Met and hepatocyte growth factor/scatter factor expression in human gliomas. Cancer Res. 57: 5391-5398, 1997. PubMed: 9393765 32276: Cairns P , et al. Genomic organization and mutation analysis of Hel-N1 in lung cancers with chromosome 9p21 deletions. Cancer Res. 57: 5356-5359, 1997. PubMed: 9393760

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General Cell Collection

ECACC No.	**89081403**
Cell Line Name	**U373 MG**
Keywords	Human glioblastoma astrocytoma
Cell Line Description	Derived from a malignant tumour by explant technique.
Species	Human
Tissue	brain
Morphology	Epithelial
Passage Number	177
Sub Culture Routine	Split sub-confluent cultures (70-80%) 1:3 to 1:6 i.e. seeding at 2-4x10,000 cells/cm² using 0.25% trypsin or trypsin/EDTA; 5% CO2; 37°C.
Culture Medium	EMEM (EBSS) + 2mM Glutamine + 1% Non Essential Amino Acids (NEAA) + 1mM Sodium Pyruvate (NaP) + 10% Foetal Bovine Serum (FBS).
Karyotype	2n = 46, the stemline chromosome number is hypotri
Depositor	Dr J Clarke, AVRI, Pirbright
Originator	No
Country	UK
References	Acta Path Microbiol Scan 1968;74:465
Additional Literature Report	Cell characteristics: 1) expresses high levels of alpha B crystallin and small heat-shock protein HSP28 (11) 2) expresses substance P receptor (13) 3) expresses TNF-alpha (14) Applications: 1) Study of neurokinin-1 receptor (1,2,4) 2) Regulations of inositol-phosphate accumulation and Protein-kinase C activation: effect of histamine (5), carbachol (5), substance P and related tachykinins (8) 3) Study of drugs and antineoplastic agents: combined effects of growth factors (3) 4) Study of HIV infection: effect of cytolegalovirus on HIV replication (6, 12); mechanism of HIV entry into neuronal cells (9, 16, 17, 18) 5) Regultaion of gene transcription and protein expression: expression of glial and neuronal cytoskeletal proteins (10); study of the DNA-binding protein IE86 (7); cytokine expression within astrocytoma cell lines (14); regulation of EGF receptor expression by TNF alpha (15) 6) Study of cell growth regulation (19) 7) Study of cell invasivness and tumorigenicity (20) Bibliography: (1) GLIA, 11 (3) 277-83 /1994 (2) NEUROSCIENCE LETTERS, 171 (1-2) 221-4 /1994 (3) ONCOLOGY RESEARCH, 5 (10-11) 423-32 /1993 (4) EUROPEAN JOURNAL OF PHARMACOLOGY, 254 (3) 221-7 /1994 (5) BRITISH JOURNAL OF PHARMACOLOGY, 111 (2) 598-608 /1994 (6) JOURNAL OF VIROLOGY, 68 (2) 959-73 /1994 (7) JOURNAL OF VIROLOGY, 67 (12) 7547-55 /1993 (8) JOURNAL OF NEUROCHEMISTRY, 59 (2) 406-14 /1992 (9) JOURNAL OF VIROLOGY, 67 (10) 5939-47 /1993 (10) AMERICAN JOURNAL OF PATHOLOGY, 142 (3) 883-92 /1993 (11) BIOCHIMICA ET BIOPHYSICA ACTA, 1175 (3) 257-62 /1993 (12) JOURNAL OF VIROLOGY, 65 (12) 6969-78 /1991 (13) BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, 179 (3) 1232-40 /1991 (14) NO TO SHINKEI. BRAIN AND NERVE, 43 (12) 1145-50 /1991 (15) NIPPON IKA DAIGAKU ZASSHI. JOURNAL OF THE NIPPON MEDICAL SCHOOL, 58 (5) 537-46 /1991 (16) SCIENCE, 253 (5017) 320-3 /1991 (17) JOURNAL OF LEUKOCYTE BIOLOGY, 49 (6) 605-9 /1991 (18) JOURNAL OF VIROLOGY, 63 (6) 2527-33 /1989 (19) JOURNAL OF IMMUNOLOGY, 141 (7) 2342-8 /1988 (20) ACTA NEUROPATHOLOGICA, 72 (3) 207-13 /1987 (21) Pharmaceutisch Weekblad / 129/47-48 (1196-1197) /1994
Additional Bibliography	Not Available
Research Council Deposit	No
Release Conditions	No
DNA Available from Stock	No

The ECACC collections represent deposits of cell cultures from world-wide sources. While every effort is made to ensure details distributed by ECACC are accurate, ECACC cannot be held responsible for any inaccuracies in the data supplied. References where quoted are mainly attributed to the establishment of the cell culture and not for any specific property of the cell line, therefore further references should be obtained regarding cell culture characteristics. Passage numbers where given act only as a guide and ECACC does not guarantee the passage number stated will be the passage number received by the customer.

Delivery State

Price Code - B

- (•) Frozen - £185.00
- ( ) Growing - £235.00
- ( ) DNA - Please call +44 (0)1980 612512 for Prices.

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Cell Lines

ATCC Number:	CRL-1690 Order this item	**Price:**	**$175.00**
Designation:	T98G [T98-G]	**Depositors:**	GH Stein
Biosafety Level:	1	**Shipped:**	frozen
Medium & Serum:	See Propagation	**Growth Properties:**	adherent
Organism:	*Homo sapiens* (human)	**Morphology:**	fibroblast
Tissue:	brain; glioblastoma multiforme		

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Related Cell Culture Products

Comments:	When deprived of serum or when crowded, the cells enter a viable G1 arrested state. The cells are anchorage independent.
Tumorigenic:	no, not tumorigenic in nude mice
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 10,12 D13S317: 13 D16S539: 13 D5S818: 10,12 D7S820: 9,10 TH01: 7,9.3 TPOX: 8 vWA: 17,20
Age Stage:	61 years
Gender:	from male organism(s)
Ethnicity:	Caucasian
Propagation:	ATCC medium: Minimum essential medium (Eagle) with 2 mM L-glutamine and Earle's BSS adjusted to contain 1.5 g/L sodium bicarbonate, 0.1 mM non-essential amino acids, and 1.0 mM sodium pyruvate, 90%; fetal bovine serum, 10% Temperature: 37.0 C

Subculturing:	Remove medium, and rinse with 0.25% trypsin, 0.03% EDTA solution. Remove the solution and add an additional 1 to 2 ml of trypsin-EDTA solution. Allow the flask to sit at room temperature (or at 37C) until the cells detach. Add fresh culture medium, aspirate and dispense into new culture flasks.
Split Ratio:	A subcultivation ratio of 1:3 to 1:10 is recommended
Fluid Renewal:	2 to 3 times per week
Freeze Medium:	culture medium 95%; DMSO, 5%
Related Products:	Recommended medium (without the additional supplements or serum described under ATCC Medium) - ATCC No: 30-2003 recommended serum - ATCC No: 30-2020
References:	22322: Stein GH . T98G: an anchorage-independent human tumor cell line that exhibits stationary phase G1 arrest in vitro. J. Cell. Physiol. 99: 43-54, 1979. PubMed: 222778 23094: Olopade OI , et al. Molecular analysis of deletions of the short arm of chromosome 9 in human gliomas. Cancer Res. 52: 2523-2529, 1992. PubMed: 1568221 32287: Rostomily RC , et al. Expression of neurogenic basic helix-loop-helix genes in primitive neuroectodermal tumors. Cancer Res. 57: 3526-3531, 1997. PubMed: 9270024

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Cell Lines

ATCC Number:	CRL-2020 Order this item	**Price:**	**$215.00**
Designation:	DBTRG-05MG	**Depositors:**	CA Kruse
Biosafety Level:	1	**Shipped:**	frozen
Medium & Serum:	See Propagation	**Growth Properties:**	adherent
Organism:	*Homo sapiens* (human)	**Morphology:**	fibroblast
Tissue:	brain; glial cell; glioblastoma		
Cellular Products:	vimentin; S-100 protein; neuron specific enolase		

Permits/Forms: In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.

Related Cell Culture Products

Comments:	The DBTRG-05MG (Denver Brain Tumor Research Group 05) cell line was established from tissue from a patient with glioblastoma multiforme who had been treated with local brain irradiation and multidrug chemotherapy. The cells are negative for platelet derived growth factor (PDGF), neuronal cell adhesion molecule (NCAM), glial fibrillary acid protein (GFAP) and class II antigen (HLA DR). No loss of heterozygosity in the p53 tumor suppressor gene was detected.
Receptors Expressed:	epidermal growth factor (EGF)
Antigen Expression:	Class I antigen expressed
DNA Profile (STR):	Amelogenin: X CSF1PO: 10,11 D13S317: 9 D16S539: 10,12 D5S818: 12,13 D7S820: 11 TH01: 7,8

	TPOX: 8 vWA: 15,16
Karyotype:	near tetraploid; range 87 to 91; most cells were missing copies of chromosome 10 and had extra copies of chromosome 7
Age Stage:	59 years
Gender:	from female organisms(s)
Ethnicity:	Caucasian
Propagation:	ATCC medium: RPMI 1640 medium with 10 mg/L adenine, 1 mg/L adenosine triphosphate, 100 mg/L L-cystine, 5950 mg/L HEPES, 15 mg/L hypoxanthine, 50 mg/L L-isoleucine, 50 mg/L L-proline, 100 mg/L sodium pyruvate and 1 mg/L thymidine, 90%; fetal bovine serum, 10%
Subculturing:	Remove medium, add fresh 0.25% trypsin, rinse and remove trypsin. Let the flask sit at room temperature (or incubate at 37C) until the cells detach. Add fresh medium, aspirate and dispense into new flasks.
Split Ratio:	A subcultivation ratio of 1:3 to 1:4 is recommended
Fluid Renewal:	Every 2 to 3 days
References:	24397: Kruse CA , et al. Characterization of a continuous human glioma cell line DBTRG-05MG: growth kinetics, karyotype, receptor expression, and tumor suppressor gene analyses. In Vitro Cell. Dev. Biol. 28A: 609-614, 1992. PubMed: 1331021 32274: Koochekpour S , et al. Met and hepatocyte growth factor/scatter factor expression in human gliomas. Cancer Res. 57: 5391-5398, 1997. PubMed: 9393765 32550: Debinski W , et al. Receptor for interleukin (IL) 13 does not interact with IL4 but receptor for IL4 interacts with IL13 on human glioma cells. J. Biol. Chem. 271: 22428-22433, 1996. PubMed: 8798406

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Cell Lines

ATCC Number:	CRL-2365 Order this item	**Price:**	**$175.00**
Designation:	M059K	**Depositors:**	J Allalunis-Turner RS Day
Biosafety Level:	1	**Shipped:**	frozen
Medium & Serum:	See Propagation	**Growth Properties:**	adherent
Organism:	*Homo sapiens* (human)	**Morphology:**	fibroblast
Tissue:	brain; glial cell; malignant glioblastoma; glioma		
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.		

Related Cell Culture Products

Comments:	M059K cells were isolated from a tumor specimen taken from a 33 year old male with untreated malignant glioblastoma The cells were isolated concurrently from the same tumor specimen as M059J (see CRL-2366). M059K cells express normal levels of DNA-dependent protein kinase while M059J cells lack DNA-dependent protein kinase activity M059K cells are approximately 30-fold less sensitive to ionizing radiation than M059J cells M059K cells are less sensitive than M059J cells to the cytotoxic effects of bleomycin, N,N-bis(2-choroethyl)-N-nitrosourea and nitrogen mustard M059K cells are proficient in repair of DNA double strand breaks The cells are negative for glial fibrillary acidic protein (GFAP) Together, M059K and M059J provide a useful model system in which to study the role of DNA protein kinase in cellular and molecular processes involving DNA damage recognition and repair
Tumorigenic:	Yes, forms tumors in SCID mice
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 10,12 D13S317: 14 D16S539: 10,12 D5S818: 11,12 D7S820: 10 TH01: 9.3

	TPOX: 8 vWA: 17
Karyotype:	Number of cells examined = 59; Modal Chromosome Number = 75 with a range of 65 to 79; Polyploidy Rate = 22%
Age Stage:	33 years
Gender:	from male organism(s)
Hela Markers:	No
Propagation:	ATCC medium: These cells are grown in a medium containing a 1:1 mixture of Dulbecco's Modified Eagle's Medium and Ham's F12 medium with 2.5 mM L-glutamine adjusted to contain 15 mM HEPES, 0.5 mM sodium pyruvate, and 1.2 g/L sodium bicarbonate supplemented with 0.05 mM non-essential amino acids and 10% fetal bovine serum. Temperature: 37.0 C
Subculturing:	Remove medium, and rinse with 0.25% trypsin, 0.53 mM EDTA solution. Remove the solution and add an additional 1 to 2 ml of trypsin-EDTA solution. Allow the flask to sit at room temperature (or at 37C) until the cells detach. Add fresh culture medium, aspirate and dispense into new culture flasks.
Split Ratio:	A subcultivation ratio of 1:6 to 1:8 is recommended
Fluid Renewal:	Every 2 to 3 days
Freeze Medium:	culture medium 95%; DMSO, 5%
Related Products:	Recommended medium (without the additional supplements or serum described under ATCC Medium) - ATCC No: 30-2006 recommended serum - ATCC No: 30-2020 derived from same individual - ATCC No: CRL-2366
References:	33940: Allalunis-Turner MJ , et al. Isolation of two lines from a human malignant glioma specimen differing in sensitivity to radiation and chemotherapeutic drugs. Radiat. Res. 134: 349-354, 1993. PubMed: 8316628 33942: Lees-Miller SP , et al. Absence of p350 subunit of DNA activated protein kinase from a radiosensitive human cell line. Science 267: 1183-1185, 1995. PubMed: 7855602 38596: Allalunis-Turner J , et al. Intact G2-phase checkpoint in cells of a human cell line lacking DNA-dependent protein kinase activity. Radiat. Res. 147: 284-287, 1997. PubMed: 9052673 38598: Allalunis-Turner MJ , et al. Radiation-induced DNA damage and repair in cells of a radiosensitive human malignant glioma cell line. Radiat. Res. 144: 288-293, 1995. PubMed: 7494872 38599: Wang J , et al. Radiation-induced damage in two human glioma cell lines as measured by the nucleoid assay. Anticancer Res. 17: 4615-4618, 1997. PubMed: 9494578

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Cell Lines

ATCC Number:	CRL-2366 Order this item	**Price:**	**$215.00**
Designation:	M059J	**Depositors:**	J Allalunis-Turner RS Day
Biosafety Level:	1	**Shipped:**	frozen
Medium & Serum:	See Propagation	**Growth Properties:**	adherent
Organism:	*Homo sapiens* (human)	**Morphology:**	fibroblast
Tissue:	brain; glial cell; malignant glioblastoma; glioma		
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.		

Related Cell Culture Products

Comments:	The cells were isolated concurrently from the same tumor specimen as M059K (see CRL-2365). M059J cells lack DNA-dependent protein kinase activity, while M059K cells express normal levels of DNA-dependent protein kinase M059J cells are approximately 30-fold more sensitive to ionizing radiation than M059K cells M059J cells are more sensitive than M059K cells to the cytotoxic effects of bleomycin, N,N-bis(2-choroethyl)-N-nitrosourea and nitrogen mustard M059J cells are deficient in repair of DNA double strand breaks The cells are negative for glial fibrillary acidic protein (GFAP) Together, M059K and M059J provide a useful model system in which to study the role of DNA protein kinase in cellular and molecular processes involving DNA damage recognition and repair M059J cells were isolated from a tumor specimen taken from a 33 year old male with untreated malignant glioblastoma
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 10,12 D13S317: 14 D16S539: 10,12 D5S818: 11,12 D7S820: 10,12 TH01: 9.3 TPOX: 8 vWA: 17

Karyotype:	aneuploid; Y chromosome is present
Age Stage:	33 years
Gender:	from male organism(s)
Hela Markers:	No
Propagation:	ATCC medium: These cells are grown in a medium containing a 1:1 mixture of Dulbecco's Modified Eagle's Medium and Ham's F12 medium with 2.5 mM L-glutamine adjusted to contain 15 mM HEPES, 0.5 mM sodium pyruvate, and 1.2 g/L sodium bicarbonate supplemented with 0.05 mM non-essential amino acids and 10% fetal bovine serum. Temperature: 37.0 C
Subculturing:	Remove medium, and rinse with 0.25% trypsin, 0.53 mM EDTA solution. Remove the solution and add an additional 1 to 2 ml of trypsin-EDTA solution. Allow the flask to sit at room temperature (or at 37C) until the cells detach. Add fresh culture medium, aspirate and dispense into new culture flasks.
Split Ratio:	A subcultivation ratio of 1:6 to 1:8 is recommended
Fluid Renewal:	Every 2 to 3 days
Freeze Medium:	culture medium 95%; DMSO, 5%
Related Products:	Recommended medium (without the additional supplements or serum described under ATCC Medium) - ATCC No: 30-2006 recommended serum - ATCC No: 30-2020 derived from same individual - ATCC No: CRL-2365
References:	33940: Allalunis-Turner MJ , et al. Isolation of two lines from a human malignant glioma specimen differing in sensitivity to radiation and chemotherapeutic drugs. Radiat. Res. 134: 349-354, 1993. PubMed: 8316628 33942: Lees-Miller SP , et al. Absence of p350 subunit of DNA activated protein kinase from a radiosensitive human cell line. Science 267: 1183-1185, 1995. PubMed: 7855602 38596: Allalunis-Turner J , et al. Intact G2-phase checkpoint in cells of a human cell line lacking DNA-dependent protein kinase activity. Radiat. Res. 147: 284-287, 1997. PubMed: 9052673 38598: Allalunis-Turner MJ , et al. Radiation-induced DNA damage and repair in cells of a radiosensitive human malignant glioma cell line. Radiat. Res. 144: 288-293, 1995. PubMed: 7494872 38599: Wang J , et al. Radiation-induced damage in two human glioma cell lines as measured by the nucleoid assay. Anticancer Res. 17: 4615-4618, 1997. PubMed: 9494578

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Cell Lines

ATCC Number:	**HTB-15** Order this item	**Price:**	**$175.00**
Designation:	U-118 MG	**Depositors:**	J Ponten
Biosafety Level:	1	**Shipped:**	frozen
Medium & Serum:	See Propagation	**Growth Properties:**	adherent
Organism:	*Homo sapiens* (human)	**Morphology:**	mixed
Tissue:	brain; glioblastoma; astrocytoma		
Permits/Forms:	In addition to the MTA mentioned above, other ATCC and/or regulatory permits may be required for the transfer of this ATCC material. Anyone purchasing ATCC material is ultimately responsible for obtaining the permits. Please click here for information regarding the specific requirements for shipment to your location.		

Related Cell Culture Products

Comments:	NOTE: The two glioblastoma cell lines, U-118 MG (HTB-15) and U-138 MG (HTB-16), reportedly from different individuals have identical VNTR and similar STR patterns. U-118 MG and U-138 MG are very similar cytogenetically and share at least six derivative marker chromosomes. This is one of a number of cell lines derived from malignant gliomas (see also ATCC HTB-14, ATCC HTB-16 and ATCC HTB-17) by J. Ponten and associates from 1966 to 1969. Mycoplasma contamination was eliminated in 1987 by treatment with BM-Cycline over a six week culture period.
Tumorigenic:	Yes, in nude mice inoculated subcutaneously with 10(7) cells (Tumors developed within 21 days at 100% frequency (5/5).)
Antigen Expression:	Blood Type A, Rh+; HLA Aw24, A28, B12, Bw47
DNA Profile (STR):	Amelogenin: X,Y CSF1PO: 11,12 D13S317: 9 D16S539: 12,13 D5S818: 11 D7S820: 9 TH01: 6 TPOX: 8 vWA: 18

Karyotype:	The line has a near pentaploid chromosome number and a wide range of chromosome number distribution (40% of the cells had numbers ranging from 110 to 115). The following 14 markers were found in most metaphases: t(1p,2p), t(3p,?), t(4p,11q), t(7p,22q), M6, t(9q,?), i(11q)18q t (10q,?), M14, M15, M16, M17 and t(10q,22q); 6 of these were found in some and 10 were seen in one only. Normal chromosomes 7, 8, 12, 19, 20 and 22 had 5 to 6 copies per cell; the X had two copies and the Y was absent.
Isoenzymes:	AK-1, 1-2; ES-D, 1; G6PD, B; GLO-I, 1-2; Me-2, 1; PGM1, 2; PGM3, 2
Age Stage:	50 years
Gender:	from male organism(s)
Ethnicity:	Caucasian
Propagation:	ATCC medium: Dulbecco's modified Eagle's medium with 4 mM L-glutamine adjusted to contain 1.5 g/L sodium bicarbonate and 4.5 g/L glucose, 90%; fetal bovine serum, 10% Temperature: 37.0 C
Subculturing:	Remove medium, and rinse with 0.25% trypsin, 0.03% EDTA solution. Remove the solution and add an additional 1 to 2 ml of trypsin-EDTA solution. Allow the flask to sit at room temperature (or at 37C) until the cells detach. Add fresh culture medium, aspirate and dispense into new culture flasks.
Split Ratio:	A subcultivation ratio of 1:3 to 1:8 is recommended
Fluid Renewal:	2 to 3 times per week
Freeze Medium:	Culture medium, 95%; DMSO, 5%
Related Products:	Recommended medium (without the additional supplements or serum described under ATCC Medium) - ATCC No: 30-2002 recommended serum - ATCC No: 30-2020
References:	22159: Beckman G , et al. G-6-PD and PGM phenotypes of 16 continuous human tumor cell lines. Evidence against cross-contamination and contamination by HeLa cells. Hum. Hered. 21: 238-241, 1971. PubMed: 4332744 22536: Fogh J , et al. Absence of HeLa cell contamination in 169 cell lines derived from human tumors. J. Natl. Cancer Inst. 58: 209-214, 1977. PubMed: 833871 22539: Fogh J , et al. One hundred and twenty-seven cultured human tumor cell lines producing tumors in nude mice. J. Natl. Cancer Inst. 59: 221-226, 1977. PubMed: 327080 23094: Olopade OI , et al. Molecular analysis of deletions of the short arm of chromosome 9 in human gliomas. Cancer Res. 52: 2523-2529, 1992. PubMed: 1568221 23128: Ponten J , Macintyre EH . Long term culture of normal and neoplastic human glia. Acta Pathol. Microbiol. Scand. 74: 465-486, 1968. PubMed: 4313504 23226: Pollack MS , et al. HLA-A, B, C and DR alloantigen expression on forty-six cultured human tumor cell lines. J. Natl. Cancer Inst. 66: 1003-1012, 1981. PubMed: 7017212 23260: Bluestein HG . Neurocytotoxic antibodies in serum of patients with systemic lupus erythematosus. Proc. Natl. Acad. Sci. USA 75: 3965-3969, 1978. PubMed: 279013 32276: Cairns P , et al. Genomic organization and mutation analysis of Hel-N1 in lung cancers with chromosome 9p21 deletions. Cancer Res. 57: 5356-5359, 1997. PubMed: 9393760

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